CLAIMS

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

1. An adapter for enabling existing telephone equipment to be connected to a Digital Subscriber Loop (DSL) link, the adapter being connected between a telephone equipment and existing telephone wiring and communicating with an Integrated Access Device (IAD) digitally, the IAD being connected to the existing telephone wiring and controlling communications with each adapter.

2. The adapter recited in claim 1, wherein each adapter is assigned its own slot in which data is transmitted and an additional slot, controlled by the IAD, is devoted to control data.

3. The adapter recited in claim 2, wherein the slots assigned to the adapter and the IAD are time slots.

4. The adapter recited in claim 2, wherein communication using the existing wiring is above a spectrum assigned to DSL, the adapter including frequency shifters for shifting frequencies of transmitted and received signals.

5. The adapter recited in claim 2, wherein voice data is transmitted using Pulse Code Modulation (PCM).

6. The adapter recited in claim 2, further comprising:

line bridge making a connection to the existing telephone wiring;

phone Digital Access Arrangement(DAA) making a connection to the telephone equipment;

a first analog-to-digital (A/D) converter connected to the DAA, an analog signal from the telephone equipment being sampled and buffered by the first A/D converter to produce a digital signal;

an encoder connected to receive an output signal from the first A/D converter and providing an encoded output;

a first digital-to-analog (D/A) converter connected to the encoder and generating an analog signal;

a first frequency shifter connected to the first D/A converter shifting the analog signal into a digital voice band;

a first filter connected between the first frequency shifter and the line bridge for filtering the shifted analog signal before going out on the telephone line via line;

a second filter connected to the line bridge for filtering an incoming analog signal from the line bridge in order to extract a digital voice band signal;

a second frequency shifter connected to the second filter for down shifting the filtered signal to base band;

a second A/D converter connected to the second frequency shifter converting shifted signal to a digital domain;

a decoder connected to the second A/D converter for decoding the converted signal; and

a second D/A converter connected between the decoder and the DAA for converting the digital signal to an analog signal supplied to the telephone equipment.

7. The adapter recited in claim 6, further comprising:

a burst transmitter connected to receive the digital signal from the A/D converter and supply an output to the encoder; and

a burst receiver connected to the decoder and providing an output to

the second D/A converter.

8. The adapter recited in claim 7, wherein the burst transceiver, the encoder, the decoder, and the burst receiver are implemented in a Digital Signal Processor (DSP), the DSP including control logic which monitors the line and synchronizes bursts of incoming and outgoing symbols.

9. The adapter recited in claim 8, wherein the control logic enables the IAD to control each adapter through information sent during the control slot and acknowledges information received for the adapter.

10. The adapter recited in claim 7, wherein the encoder produces the digital Quadrature Amplitude Modulation (QAM) symbols and the decoder decodes QAM symbols.